

REMARKS

In paragraph 2 the Office Action of November 23, 2007, it was held that claims 8 and 9 were rejected under 35 U.S.C. 103(a) as being unpatentable over Shoji in view of Statler. In view of the rejection, claim 8 has been amended, and new claim 10 has been filed. Claim 8 is patentable over the cited references, as explained below.

In the gas chromatograph of the invention, a control valve is provided in a supply path, and differential pressure detecting means is attached to the flow path for detecting a differential pressure between two ends of a flow resistance. Pressure detecting means is attached to the flow path between the flow resistance and the control valve for detecting a pressure thereat.

In the invention, control means is attached to the control valve, the differential pressure detecting means and the pressure detecting means for carrying out a predetermined calculation based on signals from the differential pressure detecting means and the pressure detecting means for controlling the opening degree of the control valve so that flow amount and pressure in the flow path can be controlled at a predetermined value by the differential pressure detecting means and the pressure detecting means.

In the invention, it is possible to calculate and control the flow amount and pressure in the flow path by applying a formula (1) and  $p_1$ (a pressure between the flow resistance and the control valve)- $\Delta p$ (a differential pressure between two ends of the flow resistance) in the specification. Therefore, the flow amount and pressure can be selectively measured and controlled by one machine.

In paragraph 2 of the Action, it was held that "The patent to Shoji discloses the claimed invention with the exception of explicitly disclosing the control valve to be disposed upstream of

both the first pressure sensor and the flow resistance and the control valve."

Actually, the control valve 5 is located down stream of the pressure sensor 21 and the differential pressure sensor 4. Accordingly, in Shoji, it is not possible to control the pressure. In Shoji, the pressure control is not disclosed or suggested, and can not be made in this arrangement.

Since the flow control can only be made in Shoji, it is not possible to use the control system to perform both the flow control and the pressure control. Although the pressure sensor, differential pressure sensor, control valve and control portion are disclosed in Shoji, it is not possible to control both the flow control and the pressure control. The idea of performing both the flow control and pressure control is not even considered in Shoji.

Statler discloses a mass flow control system for the regulation of gas flow to a variable pressure system. It was held in the Action that "Statler discloses a flow control arrangement wherein a control valve (18) is disposed upstream of both first pressure detecting means (26) and a resistance (22) for the purpose of providing flow control over a wide range (Col. 4, lines 29-34)."

In Statler, it is explained that "The invention 10, a high turndown mass flow system, as described above and depicted by a functional diagram in FIG. 2, acts to control the flow of gas into a load system where the gas delivery pressure at the load 12 varies directly as a function of the rate of mass flow  $W_g$ . A typical application would be the control of gas fuel into the combustion subsystem of a gas turbine engine."

Thus, in Statler, although the control valve is disposed upstream of both the detecting means 26 and the resistance 22, only the gas flow is controlled. Actually, the differential

pressure sensor is not provided at the resistance 22, different from the present invention. Therefore, Statler can measure the gas flow, but can not measure the pressure.

Both Shoji and Statler can perform the flow control, but not perform the pressure control. Both references do not disclose or suggest both flow control and pressure control in one control system. Actually, both Shoji and Statler do not disclose or suggest that the control means performs different calculations to perform both flow control and pressure control.

In the invention, the structure of the system is not changed, and only the calculation at the control portion is changed to perform one of the pressure control and the flow control. The cited references do not disclose or suggest the features of the invention.

The present invention is not obvious from Shoji and Statler.

Reconsideration and allowance are earnestly solicited.

Respectfully submitted,  
KANESAKA BERNER & PARTNERS

  
Manabu Kanesaka  
Registration No. 31,467

1700 Diagonal Road, Suite 310  
Alexandria, Virginia 22314  
(703) 519-9785  
Facsimile: (703) 519-7769